

Agency: Commerce, Community and Economic Development**Grants to Municipalities (AS 37.05.315)****Grant Recipient: Anchorage****Project Title:**

Anchorage - Polaris K-12 School Purchase Smartboard for Secondary Classrooms

State Funding Requested: \$ 24,000**House District: 24 - L**

One-Time Need

Brief Project Description:

SMART Board is a interactive, electronic whiteboard which can enhance instruction and learning.

Funding Plan:**Total Cost of Project: \$24,000**Funding Secured*Amount FY*Other Pending Requests*Amount FY*Anticipated Future Need*Amount FY*

There is no other funding needed

Detailed Project Description and Justification:

SMART board is an interactive way to improve student learning in the school. SMART board is an electronic whiteboard that has the ability to save information to a computer of what was written or displayed during the lesson.

This will be used to effectively teach current topics in science making internet, lecture and presentation information immediately and seamlessly available to students. This technology will also be used by students during presentations of their data allowing them to learn to use the technology.

Project Timeline:

When funds are recieved.

Entity Responsible for the Ongoing Operation and Maintenance of this Project:

Polaris K-12 School

Grant Recipient Contact Information:

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Has this project been through a public review process at the local level and is it a community priority? ☒ Yes ☐ No



Online Surveys: Completed Reports

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TUSD Smartboard Package Survey

Summary of Findings

A survey of current Smart Board users was conducted in order to prepare for the installation of Smart Boards in middle school classrooms for the 2006 – 2007 school year. All English and Math teachers who were provided a Smart Board at the beginning of the 2005 – 2006 school year comprised the survey population. Results revealed that the implementation of Smart Boards in high school classroom has:

- increase student engagement,
- improve student behavior during class,
- improved overall student learning, and
- proved successful in subjects such as Fine Arts, General Studies, Business & Marketing, Physical Education, Special Education, and Computer Education, and Language Arts classes in addition to English and Math.

Overall, it appears that implementing Smart Boards in High School classrooms has been an effective technological tool for increasing overall student engagement.

Introduction

In an effort to increase student engagement through the integration of technology in the classroom, TUSD installed Smart Boards in every high school English and Math classroom during the summer of 2005. The District plans to install Smart Boards in middle school classrooms during the summer of 2006 as part of the middle school language arts adoption.

Survey & Data Analysis Procedures

To prepare for the middle school installation, and to better support the use of Smart Boards at the high school level, the Educational Technology department designed a survey of current high school Smart Board users. Department of Accountability and Research staff conducted the survey for the Educational Technology Department between February 8th and 13th 2006 through an automated online survey application [[View Online Survey Procedures](#)].

Educational Technology staff used installation inventories and equipment transfer work orders to identify 330 high school teachers who were thought to be using a Smart Board package in their classroom. Accountability and Research sent an initial invitation email to the 330 teachers on the morning of February 8th. A reminder email was then sent on the morning of February 10th to those teachers who had not yet completed the survey.

During the survey administration fifteen of the invitees did not complete the survey, but reported that they did not have a Smart Board package in their classroom, reducing the survey population to 315. Of the adjusted group of teachers, 65% (206 of 315) responded to the survey.

After a review of the survey comments, Educational Technology staff was able to follow up with teachers at each high school to address the reported training and equipment maintenance needs. The results will also be used to design future teacher training programs.

Data Findings (Statistics and Coded Comments)

Based on summarized results of the respondents who participated in the current survey, the Smart Board package (Smart Board) implemented in classrooms during the 2005-2006 school year has been an effective technological tool for increasing overall student engagement. Most of the population surveyed agreed that the Smart Board has increased student engagement, improved both student behavior during class, and overall student learning. About half of those surveyed also reported that they are satisfied with the Smart Board package.

Of the teachers who initially received the Smart Board at the beginning of the year, only 7.3% reported that they “never” use it (Figure 1). Some of the reasons mentioned include: a lack of necessary working hardware, lack of training, the need for additional training or time to practice with the equipment, and that better and/or different software are required to carry out desired tasks. However, of the teachers that do use the Smart Board, 56.3% said that they use it on a daily basis. In addition to teachers utilizing Smart Boards during lectures, students are encouraged to use the technology as well. During interactive activities, survey respondents reported that 34% of their students use the Smart Board on a weekly basis.

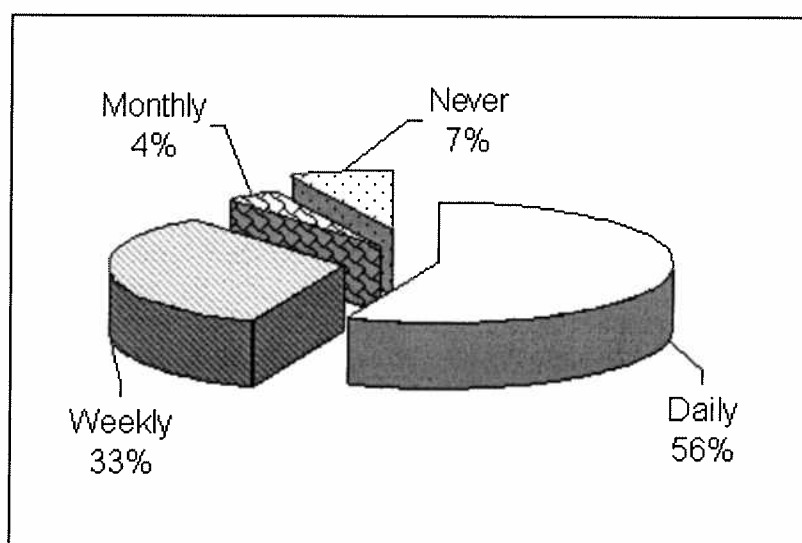


Figure 1. Frequency of use for Smart Board presentations

As expected, the majority of survey respondents use the Smart Board during English (45.10%), and Math (39.80%) classes. Of surprising results, however, was the mention of Smart Boards being utilized to teach other subjects, including: Fine Arts, General Studies, Business & Marketing, Physical Education, Special Education, and Computer Education, and Language Arts classes (Figure 2).

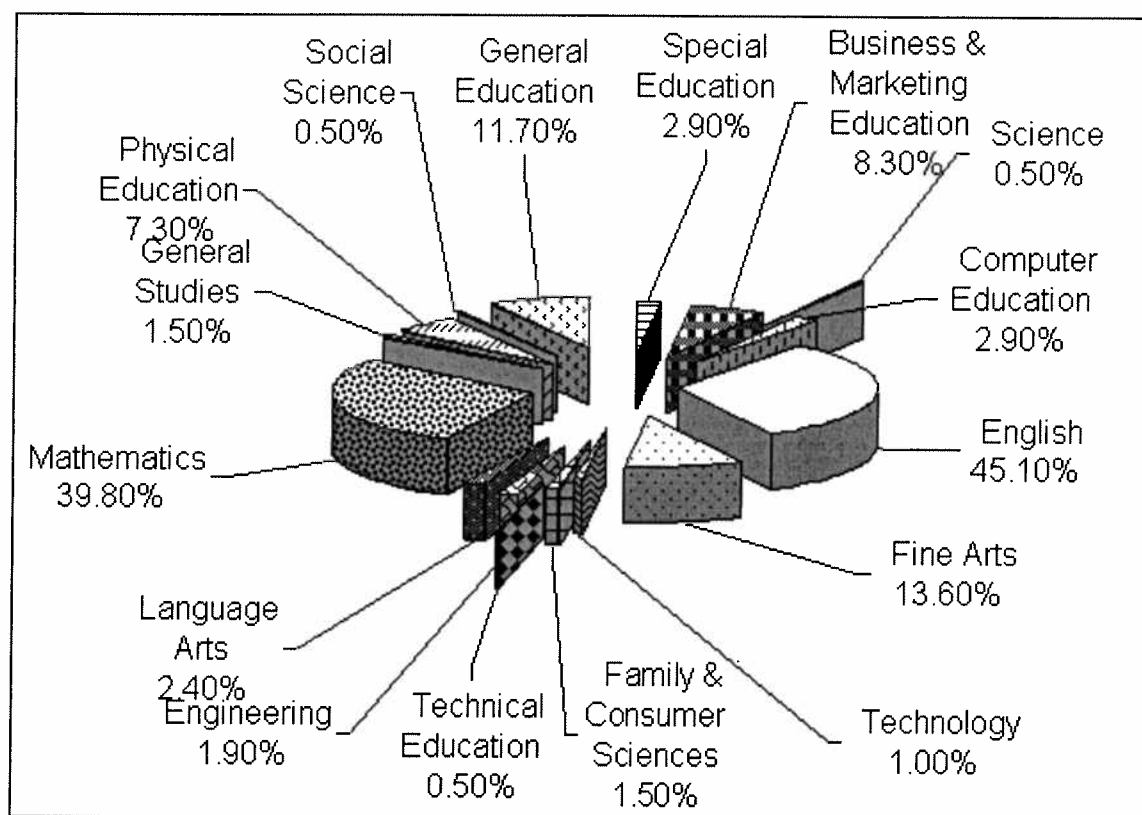


Figure 2. Subjects taught with the Smart Board

Of the participants that responded with a comment to question 7 (What other activities aside from presentations and interactive activities are you using the Smart Board for?), 14.29% mentioned that they utilize the Smart Board to gather and display Internet information and 13.49% stated that they use the technology to incorporate movies, films and music into their daily lessons.

Table 1. Coded comment statistics

Survey Question	Comment Response Rate	Percent of Comment Response Rate	Number of Unique Codes	Total Frequency Of Utilized Codes
7. Are you using your Smart Board for anything other than the activities listed in questions 4, 5, and 6 (Presentations and interactive activities)?	79	38%	39	126
14. What material is most effective with the Smart Board?	109	59%	48	205
15. Do you have any other comments regarding the implementation or use of Smart Boards?	117	57%	32	217

When asked what types of materials were most effective with the Smart Board, 11.70% commented that

instruction/lectures/examples and concepts were easier to present to their classes using the Smart Board. Additional materials included access to Internet resources and information (7.80%) and graphic data such as photos, maps and other general images (6.82%).

The majority of the survey population agree that implementation of the Smart Boards have increased student engagement, learning and improved student behavior (Figure 3). Only a small percentage believes that the technology has negatively impacted behavior. One reason for this result lies in the positioning of the technology in the room. In comparison to overhead projectors where the teacher faces the class during presentations, teachers must turn their backs to the class in order to operate the Smart Board equipment. Some teachers have noticed that this change has increased student talking and disruptive behavior in their classrooms. However, for the most part, the technology positively engages students during lecture.

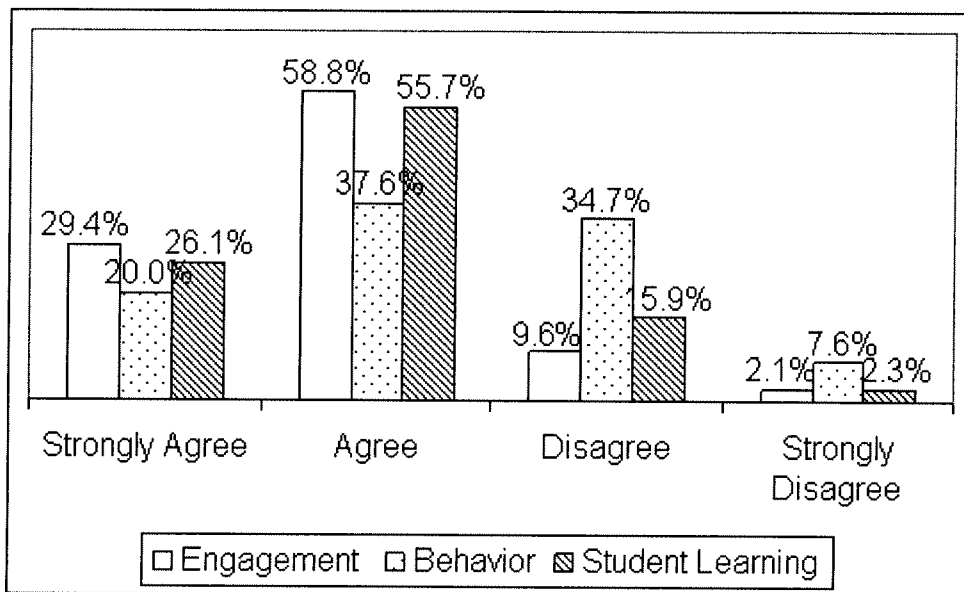


Figure 3. Summary of results to the statement: *Use of the Smart Board has improved student engagement, behavior, and learning in my class.*

When participants were asked to comment on how students as well as they have responded to the Smart Board, an overwhelming amount answered enthusiastically (Figure 4). The small percentage of people who responded with negative enthusiasm for the technology mainly attributes dissatisfaction with improperly working equipment or lack of training to operate it. In the future it is hoped that once these issues are resolved enthusiasm will increase.

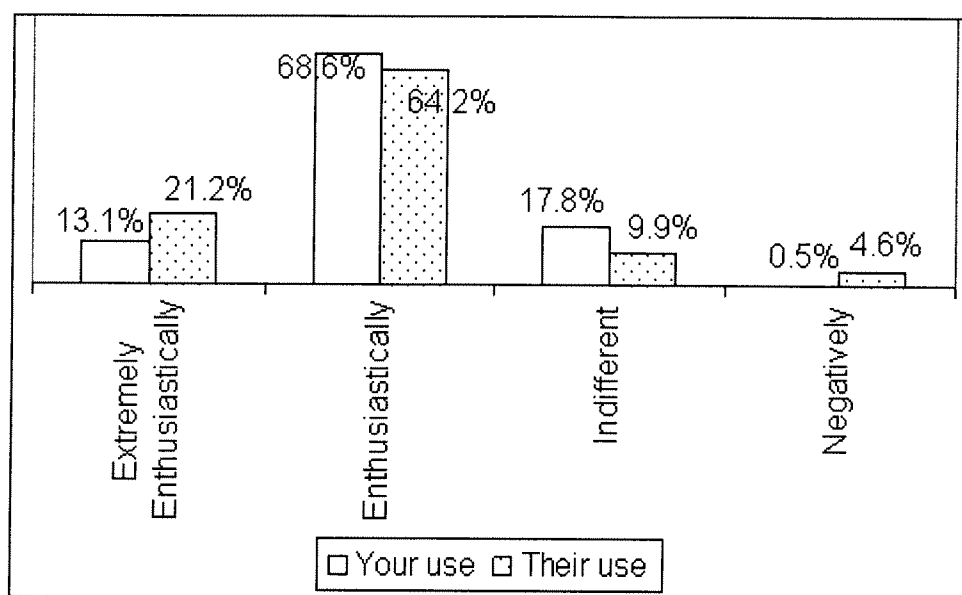


Figure 4. Summary of results to the questions: *In general, how have your students responded to your/their use of the Smart Board?*

The overall satisfaction of the Smart Boards appears to be positive. Over 50% of the survey respondents feel satisfied with the Smart Board implementation in their classes. Additionally, 36.7% feel very satisfied with the technology.

Discussion & Recommendations

While over 50% of those utilizing Smart Boards in their classrooms are satisfied with the technology, 7.3% reported that they “never” use it. This group of respondents mentioned that some of the reasons why they don’t use the Smart Board are because necessary hardware went unfixed or replaced, not enough in-depth training was provided, and that the opportunity to practice with the equipment was not available to them. It was also mentioned that some requests to have Smart Boards fixed, or parts replaced, went unfulfilled. Another proposition survey participants discussed was to mount the equipment in a different location in the classroom for safety purposes. Some feel that the current position of equipment located on rolling carts and power cords in aisle ways cause a safety hazards for students. For a solution to this problem, respondents recommended mounting equipment on the ceiling instead and rerouting power cords from the aisle ways. Mounting equipment would also minimize theft.

Another interesting finding from the survey was that even though the first Smart Board implementation was intended for high school English and Math teachers, many other teachers are utilizing the technology for different subjects in their classrooms. The top four subjects taking advantage of the Smart Board after English and Math are Fine Arts, Business & Marketing Education, General Education, and Physical Education. Because of this finding, widening the utility of this technology might improve student engagement and student achievement in other subjects as well.

In summary, it appears that implementing Smart Boards in High School classrooms has been an effective technological tool for increasing overall student engagement. Most of the population surveyed agreed that the Smart Board has increased student engagement, improved both student behavior during class and overall student learning.

These results will positively impact the decision to widen the Smart Board implementation program to Middle Schools as part of the language arts adoption during the 2006-2007 school year. Additionally, Smart Boards are effective not only in Math and English classes, but also in Fine Arts, Business and Marketing, Science and Language Arts classes. The utilitarian nature of the technology to allow faculty to

access previously time consuming data to gather, and prepare presentations and discussion in engaging ways, captures student's attention and improves student enthusiasm in the classroom.

Qualitative analysis and Summary Report written by
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Last updated July 2006

Polaris K-12 School Legislative Request

Science and math instruction benefits from the use of real world project-based instruction, where data collected as part of classroom activities is used by local, state or national scientists. With funding acquired last year, Polaris students in life science classes are collecting and contributing water quality data to the Department of Environmental Conservation water quality information through the University of Alaska Anchorage's Stream Team Program. In the 08-09 school year the successful approach of real world project based learning will be expanded to our physical and earth sciences. As part of NASA's Goddard Space Flight Center's History of Winter (HOW) program, students will collect snowflakes analyze and classify them, read the stratigraphy of the snowpack, collecting density samples of snow layers, and record climate information for their area. This data will then be submitted to NASA through the Global Snowflake Network and Dr. Peter Wasilewski, Director of HOW.

Equipment requested to implement the Physical & Earth Science Components of Polaris's project-based science program:

Classroom Smartboard: Used to effectively teach current topics in science making internet, lecture and presentation information immediately and seamlessly available to students. This technology will also be used by students during presentations of their data allowing them to learn to use the technology.

Textbooks: Currently Polaris has no textbook for the conceptual chemistry class. A full classroom set of the Prentice Hall Conceptual physics class will be used by students throughout the school year and will support the physical science instruction.

Science Equipment:

Students will collect snowflakes analyze and classify them, read the stratigraphy of the snowpack, collecting density samples of snow layers, and record climate information for their area. To outfit students for outdoor data collections the following materials are requested:

HOW

Item	Unit Cost	Units Ordered	Total Cost
Snowpit Sample			
backpacks	30.00	6	360.00
scale 1 gram reading, 2000 g capacity	45.00	6	270.00

Voile Tele Pro Shovel (D grip)	40.00	6	240.00
Wooden handled putty knives	7.00	6	42.00
Snow Saw, with offset teeth	21.00	6	126.00
2" aluminum pipes - beveled edge with caps, 500cc volume	20.00	12	240.00
Avalanche Slope Angle Guide (inclinometer)	7.00	6	42.00
Dial Stem Thermometers	30.00	36	1080.00

Global Snowflake Network

Carson Lumiloupe Magnifier, 15x	6.75	12	81.00
Laminated Snow Cards	4.45	12	53.40

Lake Ice Sampling

Magnetic Stirring Hot Plate	413.10	6	2478.60
Light table	90.30	6	541.80
LD-6 auger Telescoping/Adjustable Handle: Adjusts from 48"-57"	\$74.95	1	74.95
Polarizing film	\$21.35	12	256.20

Thermachron Missions

Thermachron	16.00	100	1600.00
Snow Sense: A Guide to Evaluating Snow Avalanche Hazard. Fredston & Fesler	7.00	6	42.00

TOTAL

5885.95

Implementation Timeline:

Equipment & books received fall of 2008

Annual School Year Equipment use			
1 st Quarter	2 nd Quarter	3 rd Quarter	4 th Quarter
Conceptual Physics textbook used daily by the Conceptual Physics class.			
	Inquiry in Action: students conducting snow pit sampling, ice sampling, snowflake identification, and collecting weather data		
		Snow Science: students conducting snow pit sampling, ice sampling, snowflake identification, and collecting weather data	Students will be encouraged to complete and attend the Alaska Science Fair and the Alaska High School Symposium.